

TSMC-02-992



February 18, 2004

To: Commissioner for Patents  
P.O.Box 1450  
Alexandria, VA 22313-1450

Fr: George O. Saile, Reg. No. 19,572  
28 Davis Avenue  
Poughkeepsie, N.Y. 12603

Subject: | Serial No. 10/723,236 11/26/03 |  
Chun Hsien Lin et al.  
AN ADVANCED PROCESS CONTROL APPROACH  
FOR Cu INTERCONNECT WIRING SHEET  
RESISTANCE CONTROL  
| \_\_\_\_\_ |

#### INFORMATION DISCLOSURE STATEMENT

Enclosed is Form PTO-1449, Information Disclosure Citation  
In An Application.

The following Patents and/or Publications are submitted to  
comply with the duty of disclosure under CFR 1.97-1.99 and  
37 CFR 1.56.

#### CERTIFICATE OF MAILING

I hereby certify that this correspondence is being  
deposited with the United States Postal Service as first class  
mail in an envelope addressed to: Commissioner for Patents,  
P.O. Box 1450, Alexandria, VA 22313-1450, on February 23, 2004.

Stephen B. Ackerman, Reg.# 37761

Signature/Date

Stephen B. Ackerman 2/23/04

U.S. Patent 6,555,477 to Lu et al., "Method for Preventing Cu CMP Corrosion," discloses a method for preventing or reducing corrosion of copper containing semiconductor features during chemical mechanical polishing (CMP).

U.S. Patent 6,372,632 to Yu et al., "Method to Eliminate Dishing of Copper Interconnects by the Use of a Sacrificial Oxide Layer," describes a copper polishing step followed by an oxide buffing step.

J. Zhang et al., "Automated Process Control of Within-Wafer and Wafer-to-Wafer Uniformity in Oxide CMP," [online] March 2002, CMP MIC [retrieved on January 27, 2003] retrieved from URL: [http://www.appliedmaterials.com/search97cgi/s97\\_sgi](http://www.appliedmaterials.com/search97cgi/s97_sgi), describes a within wafer closed loop control with feed-forward and feed-backward of data to provide run-to-run control.

U.S. Patent 6,405,144 to Toprac et al., "Method and Apparatus for Programmed Latency for Improving Wafer-to-Wafer Uniformity," discusses a method and an apparatus for implementing programmed latency for improved wafer-to-wafer uniformity.

U.S. Patent 6,148,239 to Funk et al., "Process Control System Using Feed Forward Control Threads Based on Material Groups," discusses feed forward process control system used in semiconductor fabrication based on material groupings.

U.S. Patent 6,335,286 to Lansford, "Feedback Control of Polish Buff Time as a Function of Scratch Count," discusses a CMP buffing process controlled by monitoring the scratch count on a process surface and feeding the data back to a process controller.

U.S. Patent 5,719,495 to Moslehi, "Apparatus for Semiconductor Device Fabrication Diagnosis and Prognosis," discloses an in-situ non-invasive method of determining physical properties such as sheet resistance and film thickness.

U.S. Patent 6,528,818 to Satya et al., "Test Structures and Methods for Inspection of Semiconductor Integrated Circuits," describes process control achieved through test structures in a system for detecting defects.

U.S. Patent 6,514,858 to Hause et al., "Test Structure for Providing Depth of Polish Feedback," discusses a test structure to monitor CMP polish depth.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Stephen B. Ackerman', with a stylized flourish at the end.

Stephen B. Ackerman,  
Reg. No. 37761

Form PTO-1449

INFORMATION DISCLOSURE CITATION  
IN AN APPLICATION

(Use several sheets if necessary)

Document Number (Optional)

TSMC-02-992

Application Number

10/723,236

Applicant

Chun Hsien Lin et al.

Filing Date

11/26/03

Group Art Unit

## U. S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILED DATE IF APPROPRIATE
	6555477	4/29/03	Lu et al.	438	692	5/22/02
	6372632	4/16/02	Yu et al.	438	634	1/24/00
	6405144	6/11/02	Toprac et al.	702	84	1/18/00
	6148239	11/14/00	Funk et al.	700	1	12/12/97
	6335286	1/11/02	Lansford	438	692	5/9/00
	5719495	2/17/98	Maslehi	324	158.1	6/5/96
	6528818	3/4/03	Satya et al.	257	48	8/25/00
	6514858	2/4/03	Hause et al.	438	640	4/9/01

## FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
					YES	NO

## OTHER DOCUMENTS (Including Author, Title, Date, Part/Part Pages, Etc.)

-	J. Zhang et al., "Automated Process Control of Within-Wafer and Wafer-to-Wafer Uniformity in Oxide CMP," [online] March 2002, CMP MIC [retrieved on Jan. 27, 2003] retrieved from URL: <a href="http://www.appliedmaterials.com/search97cgi/s97.cgi">http://www.appliedmaterials.com/search97cgi/s97.cgi</a> .

EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.